

What is claimed is:

1. A method of isolating plasma from a canine animal including the steps of:
 - (I) selecting a donor canine animal having a blood group compatible with a recipient canine animal having an unmatched blood group;
 - (II) collecting blood from the canine animal; and
 - (III) isolating plasma from blood collected in step (II).
2. The method of claim 1 wherein the canine animal is selected for a phenotype lacking at least one Dog Erythrocyte Antigen.
- 10 3. The method of claim 2 wherein the canine animal is negative for Dog Erythrocyte Antigen 1.1.
4. The method of claim 3 wherein the canine animal is negative for Dog Erythrocyte Antigen 1.2.
5. The method of claim 4 wherein the canine animal is negative for Dog Erythrocyte Antigen 7.
- 15 6. The method of any one of claims 1 to 5 wherein the canine animal is selected for a phenotype lacking anti-globulin antibodies.
7. The method of claim 1 further including the steps of:
 - (a) inserting a blood collecting catheter into a vein of the canine animal;
 - 20 (b) attaching the blood collecting catheter to a cell separator capable of separating blood into an isolated plasma component and an isolated blood cell component;
 - (c) collecting blood from the canine animal via the blood

collection catheter;

(d) separating the blood into the isolated plasma component and the isolated blood cell component;

(e) collecting the isolated plasma component;

5 (f) stopping the collecting of blood;

(g) returning the blood cell component to the canine animal; and

(h) repeating steps (c) – (g).

8. The method of claim 7 wherein step (h) is repeated until a total plasma protein concentration in the isolated plasma component is equal to a reference total
10 plasma concentration.

9. The method of claim 7 wherein step (h) is repeated until a gamma globulin concentration in the isolated plasma component is equal to a reference gamma globulin concentration.

10. The method of claim 7 wherein the cell separator comprises a
15 centrifuge and/or membrane comprising a suitable pore size for separating blood cells from plasma.

11. The method of claim 10 wherein the centrifuge comprises a rotating centrifuge bowl whereby the isolate plasma component is collected from an upper portion of the rotating centrifuge bowl.

20 12. The method of claim 7 wherein collecting of blood is stopped when blood cells are detected in the isolated plasma component.

13. The method of claim 11 wherein the blood cells are detected by visual inspection by an operator and/or by an automated cell analyser.

14. The method of claim 13 wherein the blood cells comprise red blood

cells, white blood cells and/or platelets.

15. The method of claim 14 wherein the isolated plasma component comprises less than 30,000 million red blood cells per litre, less than 200 million white blood cells per litre and/or less than 50,000 million platelets per litre.
- 5 16. The method of claim 8 wherein the total plasma protein concentration is determined using a refractometer.
17. The method of claim 8 wherein the total plasma protein concentration is determined using radial immuno-diffusion.
18. The method of claim 8 wherein the reference total plasma protein
10 concentration is 35 g/L.
19. The method of claim 8 wherein the reference total plasma protein concentration is 30 g/L.
20. The method of claim 8 wherein the reference total plasma protein concentration is 25 g/L.
- 15 21. The method of claim 9 wherein the reference gamma globulin plasma concentration 10 g/L.
22. The method of claim 9 wherein the reference gamma globulin plasma concentration is 12 g/L.
23. The method of claim 9 wherein the reference gamma globulin plasma
20 concentration is 15 g/L.
24. The method of claim 9 wherein the reference gamma globulin plasma concentration is 18 g/L.
25. The method of any one of claims 1 to 24 further including the step of anaesthetising the canine animal prior to collecting blood.

26. The method of claim 25 wherein anaesthetising includes administering an anaesthetic inducing agent selected from the group consisting of: propofol, thiopental sodium and other ultra short-action barbiturates.
27. The method of claim 26 further including the step of administering
5 halothane and oxygen to the canine animal after administering the anaesthetic inducing agent.
28. The method of claim 27 including the step of administering to the canine animal prior to administering the anaesthetic inducing agent a pre-medication agent capable of: calming, drying salivary secretions, maintaining blood pressure
10 and/or maintaining pulse rate of the canine animal.
29. The method of claim 28 wherein the pre-medication agent is acetylpromazine maleate and atropine sulphate.
30. The method of any one of claims 1 to 29 further including the step of administering isotonic saline to the canine animal via an intravenous catheter prior to,
15 during and/or after collecting blood from said canine animal.
31. The method of claim 7 wherein the blood collecting catheter is treated with 4% trisodium citrate.
32. The method of any one of claims 1 to 31 wherein the canine animal is immunised or hyperimmunised prior to isolating plasma.
- 20 33. A method of producing hyperimmunised canine animal plasma including the steps of:
- (1) selecting a canine animal having a blood group compatible with a recipient canine animal having an unmatched blood group;
 - (2) administering to the canine animal at least one antigen thereby

inducing an immune response in said canine animal;

(3) administering to said canine animal at least one same antigen(s) administered in step (2) during said immune response; and

(4) isolating plasma from said canine animal.

5 34. The method of claim 33 wherein said canine animal is characterised by a phenotype negative for at least one Dog Erythrocyte Antigen.

35. The method of claim 34 wherein said canine animal is characterised by a phenotype negative for Dog Erythrocyte Antigen 1.1.

36. The method of claim 35 wherein said canine animal is characterised
10 by a phenotype negative for Dog Erythrocyte Antigen 1.2.

37. The method of claim 36 wherein said canine animal is characterised by a phenotype negative for Dog Erythrocyte Antigen 7.

38. The method of any one of claims 33 to 37 wherein said canine animal is characterised by a phenotype negative for anti-globulin antibodies.

15 39. The method of any one of claims 33 to 38 wherein the isolated plasma comprises a gamma globulin concentration greater than 10 g/L.

40. The method of claim 39 wherein the isolated plasma comprises a gamma globulin concentration greater than 15 g/L.

41. The method of claim 40 wherein the isolated plasma comprises a
20 gamma globulin concentration greater than 18 g/L.

42. The method of claim 41 wherein the isolated plasma comprises a gamma globulin concentration greater than 20 g/L.

43. The method of claim 33 wherein the canine animal is administered at least one of the same antigen(s) two or more times while the immune response is

induced in the canine animal.

44. The method of claim 43 wherein the canine animal is administered at least one of the same antigen(s) five or more times while the immune response is induced in the canine animal.

5 45. The method of claim 44 wherein the canine animal is administered at least one of the same antigen(s) ten or more times while the immune response is induced in the canine animal.

46. The method of any one of claims 33 to 45 wherein the antigen(s) are administered at weekly intervals.

10 47. The method of claim 33 wherein the antigen(s) comprises one or more vaccine.

48. The method of claim 47 wherein the vaccine comprises a living attenuated virus.

49. The method of claim 33 wherein the antigen(s) are selected from the
15 groups of antigens obtained from: distemper virus, canine adenovirus type 2 (CAV2), canine parvovirus type 2 (CPV2), canine parainfluenza virus, *Bordetella bronchiseptica*, *E. coli*, or respective components thereof.

50. The method of claim 49 wherein the *E. coli* is heat killed.

51. The method of claim 50 wherein the *E. coli* is *E. coli* J5.

20 52. The method of claim 49 wherein the component of *E. coli* comprises lipopolysaccharide and/or oligosaccharide.

53. Isolated canine animal plasma obtained from a canine animal hyperimmunised in accordance with the method of any one of claims 33 to 52.

54. Isolated canine animal plasma isolated in accordance with the method

of any one of claims 1 to 32.

55. Isolated canine animal plasma comprising at least one immunoglobulin capable of binding to a gram negative bacteria or component thereof.

5 56. The isolated canine animal plasma of claim 55 wherein said gram negative bacteria or component thereof is *E. coli*.

57. The isolated canine animal plasma of claim 56 wherein the *E. coli* is *E. coli* J5.

58. The isolated canine animal plasma of claim 56 wherein the component
10 of the *E. coli* is lipopolysaccharide, oligosaccharide and/or a respective component thereof.

59. The isolated canine animal plasma of claim 55 further comprising at least one immunoglobulin capable of binding an additional canine animal pathogen.

60. The isolated canine animal plasma of claim 59 wherein the canine
15 animal pathogen is selected from the group consisting of: a virus, parasite and bacteria.

61. The isolated canine animal plasma of claim 60 wherein the canine animal pathogen is selected from the group consisting of: distemper virus, canine adenovirus type 2 (CAV2), canine parvovirus type 2 (CPV2), canine parainfluenza
20 virus and *Bordetella bronchiseptica*.

62. The isolated canine animal plasma of any one of claims 55 to 61 wherein the isolated canine animal plasma comprises a gamma globulin concentration of at least 10 g/L.

63. The isolated canine animal plasma of claim 62 wherein the gamma

globulin concentration is at least 12 g/L.

64. The isolated canine animal plasma of claim 63 wherein the gamma globulin concentration is at least 15 g/L.

65. The isolated canine animal plasma of claim 64 wherein the gamma
5 globulin concentration is at least 18 g/L.

66. The isolated canine animal plasma of any one of claims 55 to 65 wherein the isolated canine plasma comprises less than 30,000 million red blood cells per litre, less than 200 million white blood cells per litre and/or less than 50,0000 million platelets per litre.

10 67. A method for treating or improving health of a canine animal of a condition including the steps of administering to the canine animal isolated canine animal plasma of any one of claims 53 to 66.

68. The method of claim 67 wherein said condition is selected from the group consisting of: parvovirus infection, lack of passive transfer of antibodies to a
15 canine pup, hypoprotinaemia, glomerulonephritis, shock, fluid therapy, congenital clotting disorders, thrombocytopenia, vitamin K deficiency, haemophilia, disseminated intravascular coagulation, pancreatitis, reduced blood coagulation, infection, surgery, tissue injury and destruction, pyometron, poisoning, snake envenomation, advanced blood loss and severely debilitating infections.

20 69. The method of claim 68 wherein reduced blood coagulation is a result of poisoning, disseminated intravascular coagulation and/or haemophilia

70. The method of claim 67 wherein the isolated canine animal plasma is administered in range of 2-15 mL/Kg weight of the canine animal per hour.

71. The method of claim 70 wherein the isolated canine animal plasma is

administered in a range of 3-12 mL/Kg weight of the canine animal per hour.

72. The method of claim 71 wherein the isolated canine animal plasma is administered in a range of 5-10 mL/Kg weight of the canine animal per hour.